

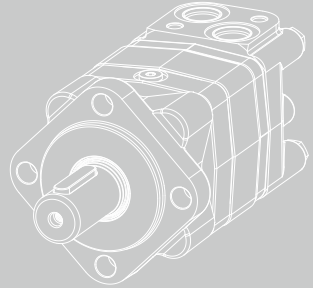
2.2



HSP series

Orbital hydraulic motor

The HSP series orbital hydraulic motor, it is a lowspeed and high-torque hydraulic motor, the end face distribution makes it to have characteristics of high working pressure, low starting pressure, high efficiency and high reliability.



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Overview

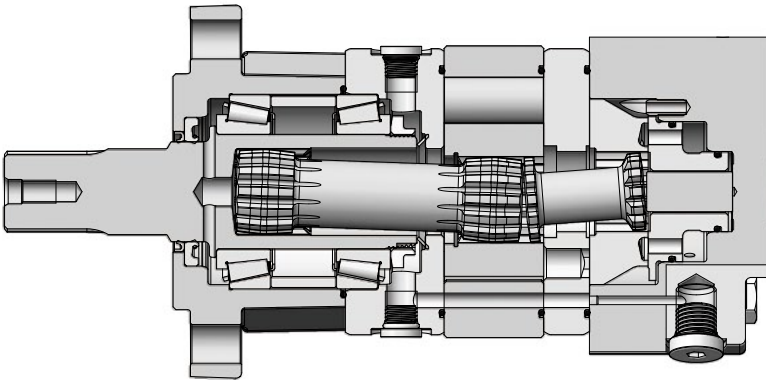
The HSP series orbital hydraulic motor, it is a low-speed and high-torque hydraulic motor, the end face distribution makes it to have characteristics of high working pressure, low starting pressure, high efficiency and high reliability. Customized product can be developed by different application requirement.

Advantages

- Using tapered roller bearing structure, can support larger axial and radial load.
- Advanced disc valve structure, high distribution accuracy, strong automatic compensation ability after wear, to ensure high volumetric efficiency, long life, efficient and stable work.
- Various displacements and installation dimensions are available.
- Optional relief valve, speed sensor

Standard structure

HSP Orbital hydraulic motor



P-0137

Specification

Type		80	100	125	160	200	230	250	315	400	500
Displacement (cm ³ /rev.)		80.2	99.6	124.9	159.2	199.4	232.1	249.3	314.0	391.9	488.3
Max.speed (rpm)	Continuous	807	746	602	472	373	323	298	238	191	156
	Intermittent	995	897	723	563	449	386	359	284	231	187
Max.torque (Nm)	Continuous	250	364	392	501	634	736	791	977	987	853
	Intermittent	315	388	492	599	722	813	874	997	992	992
Max.output (kW)	Continuous	15.5	18.0	18.0	16.5	16.5	13.8	14.5	15.0	11.0	9
	Intermittent	19.5	22.5	22.5	23.0	22.0	17.2	18.0	17.0	12.5	10.5
Max. differential pressure (bar)	Continuous	225	225	225	225	225	225	225	225	175	120
	Intermittent	275	275	275	260	250	250	250	240	190	140
	Peak	295	295	295	280	270	270	270	260	210	160
Max.flow (L/min)	Continuous	65	75	75	75	75	75	75	75	75	75
	Intermittent	80	90	90	90	90	90	90	90	90	90
Max.no-load starting pressure (bar)		12	10	10	8	8	8	8	8	8	8
Min.starting torque (Nm)	Max.continuous	201	250	313	399	500	582	625	788	764	653
	Max.Intermittent	246	305	383	461	556	647	695	840	830	762

T-0124

- Intermittent working condition: The working time should be less than 6 seconds per minute under the intermittent working condition.
- Peak differential pressure: At peak differential pressure, the operating time is less than 0.6 seconds per minute.
- It is not recommended for the motor to work at simultaneous maximum torque and maximum speed.
- The filtration standard of ISO 4406 cleaning standard 20/18/15 is recommended.
- High quality anti-wear hydraulic fluids are recommended.
- When the temperature is 50° , the minimum viscosity of the oil is recommended to be 20mm²/s.
- The recommended maximum operating temperature is 82°C .
- To assure best motor life, run motor 10-15 minutes in low speed high torque mode at approximately 50% of continuous pressure and 50% of continuous flow.

Displacement performance

		Pressure(bar)					Max.Cont		Max.Inter	
		30	70	105	140	175	210	225	250	275
80		80cm ³ /rev.								
		Torque(Nm), Speed(rpm)								
Flow (L/min)	5	30	77	115	155	195	223			
		61	59	54	44	37	32			
10	10	27	72	114	156	195	244	246	269	
		123	117	110	100	88	73	67	60	
20	20	25	70	114	154	193	233	249	279	305
		245	239	234	222	206	185	177	160	147
30	30	23	69	109	151	197	230	250	278	315
		367	360	353	343	323	302	295	279	256
40	40	25	70	105	146	189	228	248	277	307
		494	485	477	469	448	425	419	399	385
50	50		67	106	145	187	225	245		
			609	598	584	565	543	532		
Max.Cont	65		66	100	142	184	229	240		
			807	786	763	744	718	711		
Max.Inter	80		61	99	142	177				
			995	968	943	919				

Overall Efficiency: 70-100% 40-69% 0-39%

T-0125

		Pressure(bar)					Max.Cont		Max.Inter	
		35	70	105	140	175	210	225	250	275
100		100cm ³ /rev.								
		Torque(Nm), Speed(rpm)								
Flow (L/min)	5	47	98	149	198	245	284	299		
		49	48	46	43	37	31	23		
10	10	47	96	148	198	250	298	317	351	375
		100	97	94	89	84	76	71	61	49
20	20	46	96	145	198	250	301	321	358	387
		198	196	191	187	181	168	160	150	147
30	30	45	95	146	196	246	297	322	358	388
		299	297	294	289	279	263	261	248	229
40	40	42	92	141	195	245	296	319	353	387
		398	394	391	391	384	368	364	346	335
50	50	37	90	138	190	242	297	315		
		497	492	491	485	483	467	459		
60	60	36	85	134	185	235	290	310		
		596	593	583	577	562	565	552		
Max.Cont	75	31	78	125	182	229	285	305		
			746	739	742	725	711	697	692	
Max.Inter	90		73	119	175	225				
			897	878	875	861				

Overall Efficiency: 70-100% 40-69% 0-39%

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Displacement performance

		Pressure(bar)						Max.Cont		Max.Inter	
		35	70	105	140	175	210	225	250	275	
125		125cm ³ /rev.									
		Torque(Nm), Speed(rpm)									
Flow (L/min)	5	50	113	176	229	301	327				
		38	38	35	31	26	16				
10	49	113	176	241	300	352	376	412			
	79	77	74	67	60	48	45	37			
20	48	110	175	239	302	378	384	430	475		
	159	158	152	147	131	116	106	94	82		
30	47	110	171	237	299	365	392	437	475		
	240	236	233	224	213	192	184	169	153		
40	45	108	170	234	298	364	388	432	492		
	320	316	312	303	293	269	256	249	233		
50	41	101	167	235	297	365	389				
	401	395	387	381	363	348	343				
60	36	103	165	233	295	357	384				
	474	475	468	458	441	434	423				
Max.Cont 75	26	95	152	217	285	353	378				
	591	602	579	569	558	534	529				
Max.Inter 90		84	148	212	275						
		723	703	683	673						

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Overall Efficiency: 70-100% 40-69% 0-39%

		Pressure(bar)						Max.Cont		Max.Inter	
		35	70	105	140	160	175	210	225	260	
160		159cm ³ /rev.									
		Torque(Nm), Speed(rpm)									
Flow (L/min)	5	71	151	232	307	356	386				
		30	30	28	24	20	18				
10	72	151	230	311	355	385	460	489			
	63	63	58	54	47	41	34	32			
20	71	148	231	311	356	389	466	500			
	125	123	120	115	108	102	85	79			
30	67	145	226	308	355	389	488	501	599		
	187	186	183	178	170	165	145	136	112		
40	62	141	222	305	350	384	464	499	574		
	250	249	245	241	235	228	208	202	180		
50	59	134	216	297	344	378	457	491			
	311	308	305	297	293	287	264	259			
60	49	129	207	290	337	372	455	488			
	376	370	366	362	355	349	331	319			
Max.Cont 75	36	115	198	279	323	362	444	472			
	472	469	468	455	449	443	444	415			
Max.Inter 90	24	110	184	267	302						
	563	559	550	541	525						

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Overall Efficiency: 70-100% 40-69% 0-39%

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter	
		35	70	105	140	160	175	210	225	260
		199cm ³ /rev. Torque(Nm), Speed(rpm)								
Flow (L/min)	5	78	171	249	384					
		24	21	23	20					
10	76	191	293	383	446	488	574			
	48	48	48	45	37	36	27			
20	83	190	292	393	452	496	593	633	695	
	99	99	97	93	89	85	72	63	52	
30	81	187	289	390	455	492	608	634	701	
	149	148	146	146	139	134	120	112	97	
40	76	183	285	387	444	487	592	633	722	
	198	198	198	197	192	188	175	171	158	
50	61	177	278	379	439	479	584	626		
	249	248	247	245	242	235	229	221		
60	52	167	268	372	427	475	571	612		
	298	294	293	293	286	279	264	257		
Max.Cont 75	42	155	257	354	410	454	558	603		
	373	378	373	371	363	355	340	329		
Max.Inter 90	27	141	240	339	400					
	449	446	448	437	431					

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Overall Efficiency: 70-100% 40-69% 0-39%

		Pressure(bar)							Max.Cont	Max.Inter	
		35	70	95	125	140	155	175	200	225	250
		232cm ³ /rev. Torque(Nm), Speed(rpm)									
Flow (L/min)	5	113	232	320							
		21	20	20							
10	113	229	321	420	465	517	569	652			
	43	42	40	38	36	33	33	31			
20	111	227	316	416	462	515	513	654	736	813	
	86	85	84	79	76	73	71	65	61	56	
30	109	222	310	412	462	514	510	657	735		
	129	125	123	119	115	115	111	101	99		
40	105	218	307	409	461	511	510	652	729		
	173	167	167	160	159	154	152	143	140		
50	98	213	298	405	447	500	504				
	217	214	215	204	204	196	200				
60	89	213	291	400	442	497	498				
	260	257	254	248	246	240	241				
Max.Cont 75	77	192	274	390	428	483	482				
	323	323	319	312	312	306	305				
Max.Inter 90	57	173	258	364	411						
	386	385	384	381	374						

T-0130

Overall Efficiency: 70-100% 40-69% 0-39%

Displacement performance

		Pressure(bar)								Max.Cont	Max.Inter
		35	70	95	125	140	155	175	200	225	250
		249cm ³ /rev. Torque(Nm), Speed(rpm)									
Flow (L/min)	5	115									
		19									
10	117	239	332	438	482	536	596				
	40	38	38	34	34	32	28				
20	113	239	331	437	490	546	620	722	780	874	
	78	78	77	72	69	67	63	55	46	39	
30	111	237	330	437	490	544	618	704	787		
	120	119	118	115	113	110	103	93	80		
40	106	231	322	430	487	538	624	703	791		
	159	157	154	154	154	149	145	134	124		
50	102	223	320	430	479	531	610				
	200	195	196	196	192	192	186				
60	91	216	311	416	471	522	596				
	239	238	240	237	235	231	225				
Max.Cont 75	79	206	292	406	453	507	580				
	298	295	294	293	291	285	276				
Max.Inter 90	59	185	273	385	423						
	357	358	359	354	351						

T-0131

Overall Efficiency: 70-100% 40-69% 0-39%

		Pressure(bar)								Max.Cont	Max.Inter
		35	70	100	120	140	160	175	200	225	250
		314cm ³ /rev. Torque(Nm), Speed(rpm)									
Flow (L/min)	5	147	309	426							
		15	13	13							
10	151	306	440	527	600	670					
	30	28	28	25	23	20					
20	154	304	442	531	612	731					
	62	63	60	60	55	46					
30	150	318	439	541	617	700	764	823	977	997	
	94	94	92	89	85	76	73	65	66	60	
40	144	303	448	532	647	756	826	903	940		
	127	127	125	121	117	111	105	95	98		
50	127	297	442	533	639	754	809				
	160	158	156	153	149	144	139				
60	125	285	436	525	633	744	809				
	187	191	187	186	182	174	168				
Max.Cont 75	99	266	406	502	601	706					
	238	237	237	234	226	222					
Max.Inter 90	68	238	388	479	572						
	283	284	284	281	276						

T-0132

Overall Efficiency: 70-100% 40-69% 0-39%

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter	
		30	60	80	105	120	140	160	175	190
400		392cm ³ /rev. Torque(Nm), Speed(rpm)								
Flow (L/min)	5	167	352							
		12	12							
10	177	346	461	606						
	25	24	22	21						
20	170	341	463	609	695	809	864	987		
	49	47	47	45	43	39	33	30		
30	162	337	457	606	692	807	916	990	992	
	73	73	74	72	70	65	58	45	41	
40	153	328	445	593	683	799	912	982		
	98	99	98	96	97	90	83	69		
50	143	318	437	576	668	788				
	124	124	124	122	121	116				
60	133	301	420	566	653	775				
	151	148	148	146	144	141				
Max.Cont	75	101	277	393	540	629				
Max.Inter	90	73	246	361	511					
		231	221	222	220					

T-0133

Overall Efficiency: 70-100% 40-69% 0-39%

		Pressure(bar)					Max.Cont	Max.Inter
		25	50	80	90	105	120	140
500		488cm ³ /rev. Torque(Nm), Speed(rpm)						
Flow (L/min)	10	189	355					
		18	18					
20	176	354	571	646	760			
	40	39	37	34	31			
30	164	343	564	636	742	853	992	
	59	57	55	54	51	48	38	
40	148	333	550	621	729	833		
	80	78	76	74	73	70		
50	136	318	537	610	717	831		
	98	100	96	95	93	87		
60	119	302	524	598	705			
	120	118	117	115	111			
Max.Cont	75	94	269	489	565	673		
Max.Inter	90	56	237	455	528			
		177	187	174	172			

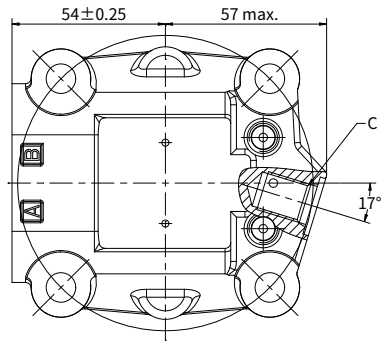
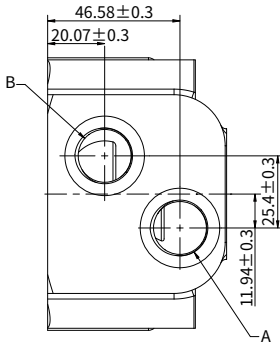
Torque(Nm):831
Speed(rpm): 87

Overall Efficiency: 70-100% 40-69% 0-39%

T-0134

Installation size

Port size



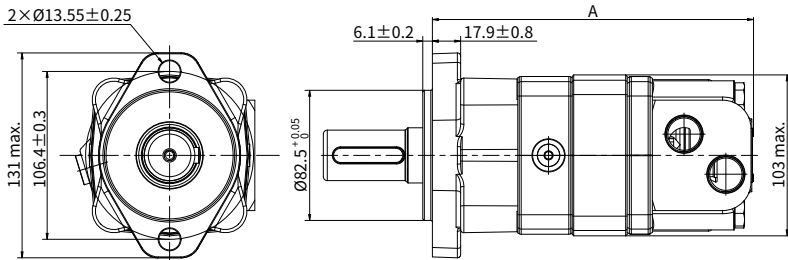
P - 0167

Port size: **1** Main PortA, B: G1/2
Drain PortC: G1/4

4 Main PortA, B: M22 × 1.5
Drain PortC: M14 × 1.5

02

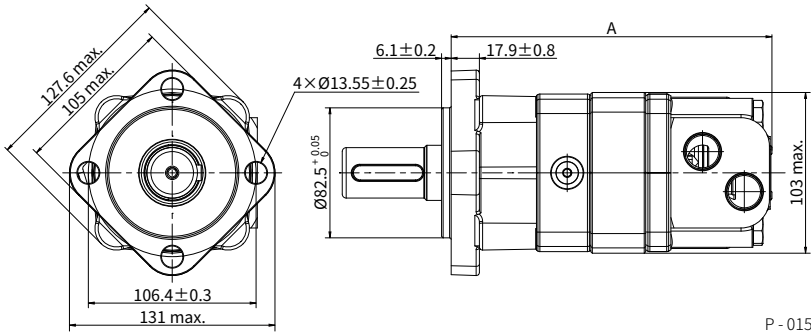
A3 2-HOLE, SAE A MOUNT



P - 0157

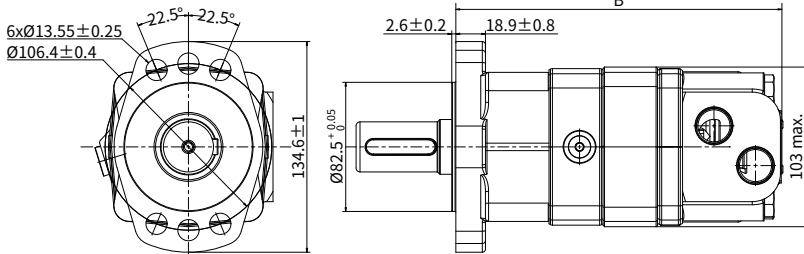
Installation size

A2 4-HOLE, SAE A MOUNT



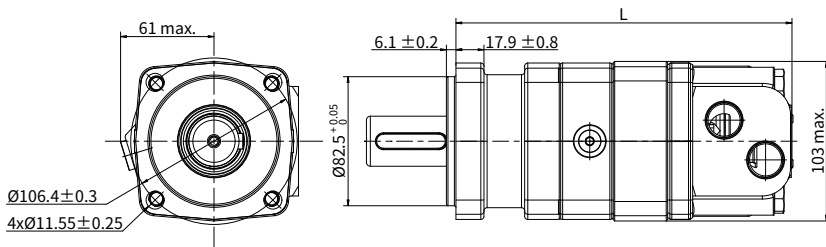
P - 0158

M0 6-HOLE, MAGNETO MOUNT



P - 0159

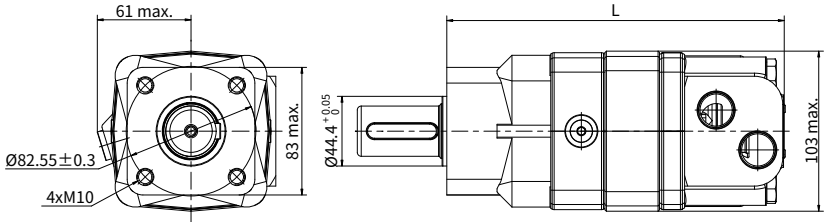
F1 FOUR-THROUGH HOLE SQUARE FLANGE



P - 0160

Installation size

F2 FOUR-THREADED HOLE SQUARE FLANGE



P - 0161

Length and weight

Displacement cm ³ /rev.	L mm	A mm	B mm
80	194.1	182.0	175.9
100	197.5	185.4	179.3
125	201.9	189.8	183.7
160	207.9	195.8	189.7
200	214.9	202.8	196.7
230	220.6	208.5	202.4
250	223.6	211.5	205.4
315	234.9	222.8	216.7
400	248.5	236.4	230.3
500	248.5	236.4	230.3

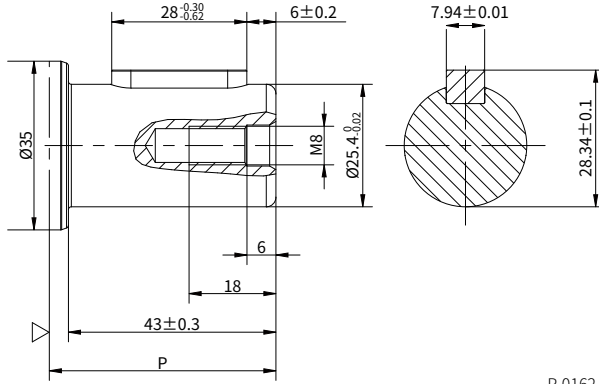
T-0136

Note: Dimensions L, A, B are the length from the flange mounting surface to the rear end of the motor, and the tolerance is ± 0.61 mm.

Shaft end dimensions

S4

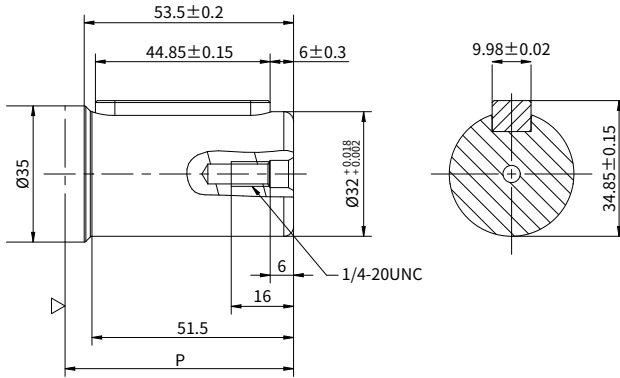
Φ25.4mm Straight
Parallel key 8×7×28
Max. Torque: 655Nm



P-0162

S3

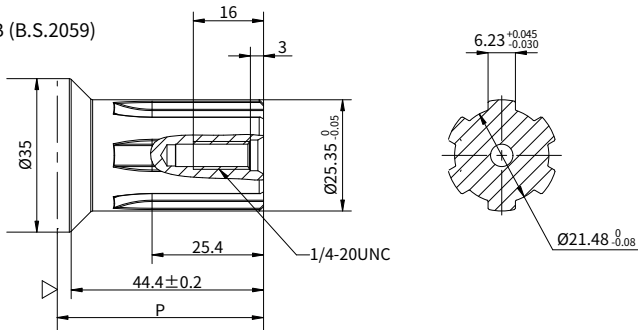
Φ32mm Straight
Parallel key 10×8×45
Max. Torque: 881Nm



P-0163

R1

Φ25.4mm Spline SAE 6B (B.S.2059)
Max. Torque: 678Nm



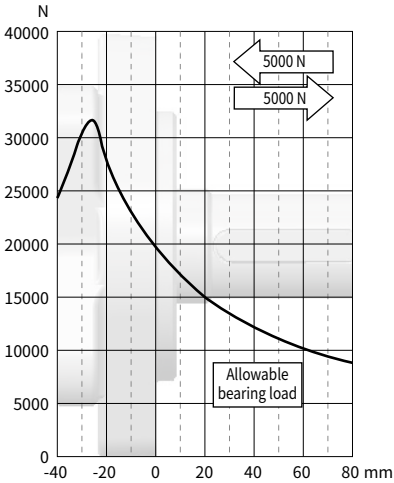
P-0166

Allowable shaft load/bearing curve

As shown in the figure, when the axial load is 0, the radial allowable load of the output shaft is related to the distance from the flange mounting surface to the load action point.

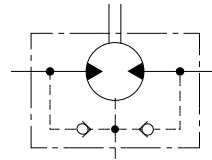
The solid line shows the allowable radial load of the bearing. It is based on L_{10} bearing life 2000 hrs at 100 RPM with rated output torque.

Any shaft load exceeding the values quoted in the curve will involve a risk of failure.



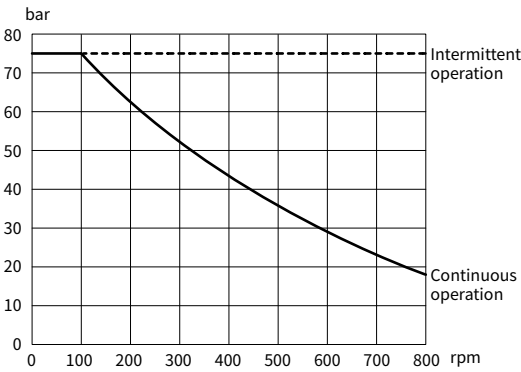
P-0138

Hydraulic diagram



P-0020

Permissible shaft seal pressure



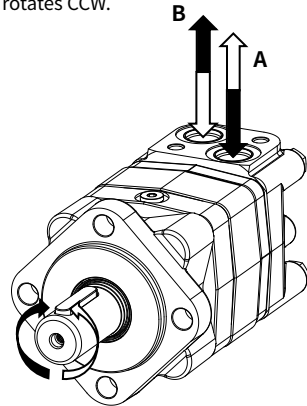
P-0019

When case drain port is not working, the pressure on the output shaft seal is slightly higher than the pressure in the return line.

When using a drain line, the pressure on the shaft seal of the output shaft is the same as the pressure in the drain line.

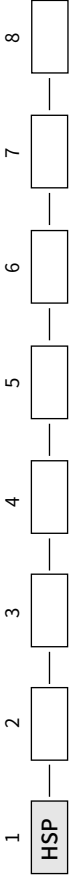
Rotation direction: CW

When facing the motor shaft extension direction, port A is high pressure oil, the output shaft rotates CW; Otherwise, it rotates CCW.



P-0028

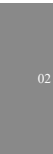
Ordering information



Pos.1	2	3	4	5	6	7	8
Series code	Displacement	Mount	Port	Output shaft	Rotation direction	Paint option	Special features
HSP	080	A3	1 Port G1/2, Drain Port G1/4 4 Port M22×1.5, Drain Port M14×1.5	S4	φ25.4 Straight, Parallel key 8×7×28 S3 φ32 Straight, Parallel key 10×8×45 R1 φ25.4, Spline SAE 6B R9 φ30, Spline SAE 6B R5 φ31.75 Spline 14-DP12/24	A CW R CCW	A Standard F Free running V High temperature S Low temperature R Mount rotation 90° S1 Reserved holes for speed sensors S2 Speed sensors
	100	A3		φ106.4, pilot φ82.5×6.1			
	125	A2		SAE A 4×φ13.5 Mount			
	160	A2		SAE A 4×φ13.5 Mount			
	200	M0		φ106.4, pilot φ82.5×6.1			
	230	M0		6×φ13.5 Magneto Mount			
	250	F1		φ106.4, pilot φ82.5×2.6			
	315	F1		4×φ11.55 Square Mount			
	400	F2		φ106.4, pilot φ82.5×6.1			
	400	F2		4×M10Square Mount			
	500	F2		φ82.55, pilot φ44.4×3			

T-0135

Note: When using the order information, the user can select the motor series, displacement, installation flange, port, shaft and other information. If the selected specification is not in the table or has special requirements, please contact us.



02